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PROGNOSTIC DISCUSSION FOR LONG-LEAD OUTLOOKS
CLIMATE PREDICTION CENTER NCEP
NATIONAL WEATHER SERVICE WASHINGTON DC
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BASIS AND SUMMARY OF THE CURRENT LONG-LEAD OUTLOOK

THESE OUTLOOKS REFLECT THE EXPECTED U.S. CLIMATE ANOMALIES FOR WEAK COLD ENSO TRENDING TO NEUTRAL ENSO CONDITIONS FOR JFM AND FMA - WITH NEUTRAL CONDITIONS THEREAFTER THROUGH EARLY SUMMER. THE NORTH ATLANTIC OSCILLATION (NAO) AND THE RELATED ARCTIC OSCILLATION (AO) HAVE STRONG IMPACTS ON THE CENTRAL AND EASTERN U.S. CLIMATE DURING THE WINTER AND SPRING SEASONS - ALTHOUGH UNFORTUNATELY THEY HAVE LOW PREDICTABILITY BEYOND A WEEK OR SO AHEAD. THE AO APPEARS TO BE WEAKLY INFLUENCED BY THE TROPICAL INTRASASONAL (MJO) ACTTIVITY - WHICH GENERALLY IS MORE PROMINENT THAN USUAL DURING WEAK NEGATIVE OR NEAR NEUTRAL ENSO EVENTS SUCH AS IS EXPECTED FOR THE REMAINDER OF THIS WINTER AND PROBABLY INTO EARLY SPRING. THE MJO ALTERNATES CYCLICALLY WITH AN IRREUGLAR PERIOD OF ABOUT 45 DAYS AND THE AO AND NAO ALSO TEND TO VARY A BIT MORE COHERENTLY BETWEEN THEIR POSITIVE AND NEGATIVE PHASES WHEN ENSO IS IN A NEUTRAL OR WEAK NEGAGIVE PHASE THAN THEY DO ON AVERAGE. THIS IMPLIES MORE VARIABILITY THAN USUAL IN THE CLIMATE DURING THE UPCOMING SEASONS - WITH THE OVERALL AVERAGE SLIGHTLY FAVORING COLD CONDITIONS OVER MUCH OF THE U.S. THIS ASSOCIATION IS STRONGEST OVER THE NORTH-CENTRAL U.S. AND WEAKEST IN THE SOUTH WHERE TRENDS FAVRORING ABOVE NORMAL TEMPERATURES ARE LIKELY TO PREDOMINATE.

ESTIMATES OF DECADAL TRENDS PLUS ENSO-NEUTRAL AND COLD COMPOSITES THUS PROVIDE THE BASIS FOR THE SEASONAL OUTLOOKS FOR THE UPCOMING WINTER. THE REST OF THIS WINTER IS HIGHLY LIKELY TO AVERAGE COOLER THAN THE LAST THREE EXCEPTIONALLY MILD ONES OVER MUCH OF THE COUNTRY. NEVERTHELESS - ON BALANCE WE STILLL EXPECT GENRALLY ABOVE NORMAL TEMPERATURES OVER THE SOUTHWEST AND SOUTHERN BORDER OF THE U.S. WHEN COMPARED TO THE 1961-90 CLIMATOLOGY - A NORMAL WHICH WILL CONTINUE TO BE THE BENDHMARK UNTIL EARLY NEXT SPTING WHEN THE 1971-2000 NORMALS WILL BECOME THE OFFICIAL STANDARD. RADIATIONAL COOLING OVER SHALLOW ARCTIC AIR THAT IS EXPECTED TO BE RENEWED FROM TIME TO TIME IS THE RATIONALE FOR THE AREA OF BELOW NORMAL TEMPERATURES OVER THE NORTHERN GREAT BASIN FOR JFM.

STATISTICAL PREDICTIONS OF NINO 3.4 INDICATE A STRONG ENOUGH POSSIBILITY OF A WARM EVENT BY WINTER 2001/2002 TO PLAY A ROLE IN THE TWO LONGEST LEADS - WHEN THE SEASONAL SIGNAL OF WARM OR COLD ENSO PHASES IS STRONGEST AND MOST RELIABLE. DURING INTERVENING SEASONS FROM MAM 2001 THROUGH NDJ 2001-2 THE FORECASTS ARE BASED PRIMARILY ON A CONSENSUS OF THE OPTIMAL CLIMATOLOGY (OCN) AND CANONICAL CORRELATION (CCA) TOOLS.

CURRENT ATMOSPHERIC AND OCEANIC CONDITIONS

DURING RECENT WEEKS - ATMOSPHERIC AND OCEANIC INDICES OF ENSO HAVE SHOWN A REDEVELOPMENT OF COLD PHASE (LA NINA) CONDITIONS ESPECIALLY OVER THE CENTRAL PACIFIC. A LARGER AREA OF 1 DEGREE C OR MORE BELOW NORMAL SSTS HAS DEVELOPED OVER THE CENTRAL EQUATORIAL PACIFIC BETWEEN 150W AND 170E THAN HAS BEEN SEEN SINCE LATE LAST SPRING. HOWEVER - THIS IS PARTLY DUE TO THE EFFECTS OF A STRONG INTRASEASONAL MJO - AND SSTS WILL LIKELY RETURN TO WEAK OR NEAR NEUTRAL CONDITIONS AS THE PHASE OF THE MJO CHANGES. ONE OR TWO ADDTIONAL CYCLES OF THE MJO ARE LIKELY IN THE COURSE OF THE WINTER AND EARLY SPRING. HOWEVER - A PATTERN REVERSAL OR EL NINO ONSET IS HIGHLY UNLIKELY DURING THE WINTER - AND IS BY NO MEANS A SURE BET EVEN DURING THE COMING SPRING - ALTHOUGH THE BOREAL SPRING IS THE SEASON DURING WHICH A CHANGE IS MOST LIKELY. NEVERTHELESS - THE INGREDIENTS FOR AN EVENTUAL PHASE REVERSAL ARE PRESENT WITH A DEEPER-THAN-NORMAL OCEANIC THERMOCLINE IN THE EQUATORIAL WEST-CENTRAL AND WESTERN PACIFIC - WITH TEMPERATURES AVERAGING UP TO 3 DEGREES CELSIUS ABOVE NORMAL AT THERMOCLINE DEPTH. THE NEGATIVE TEMPERATURE ANOMALIES THAT HAVE CHARACTERIZED THE SUBSURFACE THERMAL STRUCTURE IN THE

EASTERN PACIFIC SINCE LATE 1998 - WHILE WEAKER THAN IN OCTOBER 1999 - HAVE REASSERTED THEMSELVES SOMEWHAT IN RECENT WEEKS. LAST SUMMER AND FALL THE PATTERN OF TROPICAL CONVECTION FEATURED INTRASEASONAL ACTIVITY OVER THE EASTERN INDIAN OCEAN - INDONESIA - AND THE WESTERN TROPICAL PACIFIC - BUT ALSO REMAINED GENERALLY CONSISTENT WITH WEAK COLD EPISODE CONDITIONS IN THAT SUPPRESSED CONVECTION NEAR THE DATELINE WAS BROKEN THRUOGH ONLY ONCE - IN AUGUST.

PROGNOSTIC DISCUSSION OF SST FORECASTS

WITH THE INITIAL CONDITIONS SOMEWHAT COLDER THAN A MONTH AGO - THE NCEP STATISTICAL MODELS (CONSTRUCTED ANALOG (CA) METHOD AND CANONICAL CORRELATION ANALYSIS (CCA)) CONTINUE TO PREDICT SLIGHTLY BELOW NORMAL SSTS UNTIL MAM - WHEN THEY CROSS THROUGH ZERO. THIS IS ONE MONTH LATER THAN INDICATIONS WERE A MONTH AGO. ONLY THE CONSTRUCTED ANALOG (CA) MODEL HOLDS TEMPERATURES CLOSE TO NEAR-NORMAL THROUGH THE END OF NEXT YEAR - WHILE THE COUPLED MODELS - CCA AND CONSENSUS ALL INDICATE THAT THE WARM PHASE OF ENSO WILL BE ESTABLISHED BY LATE NEXT SUMMER. HOWEVER - THE UNCERTAINTY IS LARGE ENOUGH THAT THE STRENGTH OF ANY EL NINO THAT MAY DEVELOP IS HIGHLY UNCERTAIN AT THIS TIME - AND IN ANY CASE IT WOULD NOT BE LIKELY TO HAVE MUCH INFLUENCE ON THE U.S. CLIMATE UNTIL NEXT WINTER - WHEN IT WAS FACTORED INTO THE DJF AND JFM 2002 U.S. FORECASTS. SINCE FORECASTS THIS FAR OUT ARE OBVIOUSLY UNCERTAIN - USERS ARE ADVISED TO MONITOR THE MONTHLY UPDATES OF THESE FORECASTS AS WE GET CLOSER TO NEXT WINTER.

PROGNOSTIC TOOLS USED FOR U.S. TEMPERATURE AND PRECIPITATION OUTLOOK

IN GENERAL FEW CHANGES WERE MADE FORM LAST MONTH'S SET EXCEPT FOR THE INTRODUCTION OF BELOW NORMAL TEMPERATURES TO PARTS OF THE UPPER MIDWEST AND NORTHEAST DURING JFM AND FMA 2001. THE CCA AND SMLR FORECASTS WERE CONSULTED AT ALL LEAD TIMES. NOTE THAT THE CMP FORECASTS WERE BELIEVED TO HAVE HAD AN INITIALIZATION ERROR THAT MAY HAVE CAUSED ERRORS IN THE MID-LATITUDE ATMOSPHERIC FORECAST FIELDS - SO THIS TOOL WAS NOT EXPLICITLY CONSIDERED. AS DISCUSSED ABOVE - COMPOSITES OF WEAK AND NEUTRAL PHASE ENSO PATTERNS STRATIFIED WITH NEGATIVE TO NEUTRAL PHASE AO PATTERNS WERE USED AS THE BASIS FOR FORECASTING BELOW NORMAL TEMPERATURES IN THE NORTHERN PART OF THE COUNTRY DURING THE FIRST TWO LEADS. AFTER THAT - THE PRIMARY TOOL FOR THIS SET OF FORECASTS IS THE TREND - AS RENDERED BY THE OCN TOOL RELATIVE TO THE 1961-1990 CLIMATOLOGY. ENSO COLD COMPOSITES WERE USED FOR JFM AND FMA 2001 AND ENSO WARM COMPOSITES WERE USED FOR DJF AND JFM 2002. OTHER SMALLER MODIFICATIONS ARE MENTIONED BELOW WHERE RELEVANT.

PROGNOSTIC DISCUSSION OF OUTLOOKS - JFM 2001 TO JFM 2002.

THE TEMPERATURE FORECAST FOR JFM 2000 CALLS FOR WARMER-THAN-NORMAL TEMPERATURES ALONG THE SOUTHERN TIER OF STATES - PARTICULARLY IN THE DESERT SOUTHWEST AND THE WESTERN GULF STATES. WARMTH ALONG THE WEST COAST IS REDUCED BECAUSE OF COLD LOCAL SSTS - AND WE ELIMINATED WARMTH IN THE NORTHERN AND CENTRAL GREAT BASIN AND ROCKIES BECAUSE OF EXPECTED INCURSIONS OF SHALLOW COLD ARCTIC AIR THAT LEAVE SHALLOW LOW-LEVEL INVERSIONS THAT ARE DIFFICULT TO HEAT DURING THE SEASONS OF LOW SUN ANGLE - EVEN IF THE MID-TROPOSHERIC CIRCULATION BECOMES MILDER. BELOW NORMAL TEMPERATURES WERE INTRODUCED IN MUCH OF THE NORTHERN PART OF THE NATION FOR THE REASONS DISCUSSED ABOVE - AND THIS IS A SINGIFICANT CHANGE FROM LAST MONTHS FORECASTS FOR JFM AND FMA. WETTER-THAN-NORMAL CONDITIONS FROM THE INTERIOR CENTRAL GULF STATES TO THE MIDDLE ATLANTIC ARE LIKEWISE SUPPORTED BY TREND ESTIMATES FOR ENSO-NEUTRAL AND WEAK LA NINA CONDITIONS - AND SYNOPTIC CONSIDERATIONS FOR AN ACTIVE STORM TRACK BETWEEN THE COLD AIR

PREVAING TO THE NORTH AND WARM AIR TO THE SOUTH. WE OPTED FOR BELOW MEDIAN PRECIPITATION ONLY OVER THE FLORIDA AREA - WHERE THE LA NINA DRY SIGNAL IS STRONGEST AND MOST RELIABLE.

THE FORECASTS FOR MAM 2001 THROUGH NEXT FALL REFLECT THE LONG TERM TRENDS TEMPERED BY COMPOSITES FOR ENSO-NEUTRAL CONDITIONS (IN WHICH THE TREND HAS BEEN REMOVED). ABOVE NORMAL TEMPERATURES ARE EXPECTED OVER THE SOUTHERN HALF OF THE LOWER 48 STATES. PROBABILITIES FOR ABOVE NORMAL TEMPERATURES ARE HIGHEST IN THE SOUTH AND SOUTHWEST WHERE YEAR-TO-YEAR VARIABILITY IS SMALL IN RELATION TO THE TRENDS. CLIMATOLOGICAL ODDS ARE FAVORED OVER MOST OF THE NORTHERN AND CENTRAL PARTS OF THE COUNTRY - UNTIL JJA AND JAS WHEN TRENDS STILL FAVOR BELOW NORMAL OVER A PORTION OF THE MIDWEST. WARMTH MAY EXTEND NORTH ALONG THE EASTERN SEABOARD DURING MJJ AND JJA. OVER SOUTHERN ALASKA TEMPERATURES ARE EXPECTED TO REMAIN BELOW NORMAL THROUGH FMA 2001 DUE TO CCA AFTER WHICH THE TREND TOOLS TAKE OVER AND INDICATE THAT TEMPERATURES WILL BE ABOVE NORMAL - ESPECIALLY OVER NORTHERN PARTS OF THE STATE. CLIMATOLOGICAL PROBABILITIES FOR PRECIPITATION IN ALASKA ARE FORECAST FOR ALL SEASONS.

PRECIPITATION TRENDS STILL FAVOR RELATIVELY WET SPRINGTIME CONDITIONS IN THE PACIFIC NORTHWEST - AND THIS IS SUPPORTED BY CCA. OCN INDICATES STRONG WARMING TRENDS IN ALASKA IN THE SPRING AND EARLY SUMMER WITH THE CCA SUPPORTING THIS BY EARLY SUMMER FOR THE INTERIOR AREAS.

THE FORECAST FOR JAS 2001 TROUGH DJF 2001/2002 SHOWS WARMING TRENDS FOR MUCH OF THE WEST - AND IN PORTIONS OF THE SOUTHERN STATES - DIMINISHING FROM JAS TO OND. CCA INDICATES BELOW MEDIAN PRECIPITATION IN JAS AND ASO FOR PORTIONS OF THE PACIFIC NORTHWEST AND THE GREAT BASIN - WITH SOME SUPPORT FROM OCN.

FOR NDJ AND ESPECIALLY DJF AND JFM 2002 WE STRETCHED THE TREND TOOLS TO LOOK SOMEWHAT LIKE A WARM EVENT COMPOSITE. MOST NOTABLY WE EXTENDED THE ABOVE MEDIAN PRECIP FROM TEXAS BACK INTO CALIFORNIA AND EASTWARD AS WELL THROUGH THE GULF STATES. DURING WARM ENSO THE TRENDS FOR WARM WEATHER IN THE NORTHEAST WOULD PREVAIL UNABATED AND MAY EXTEND WESTWARD INTO THE UPPER MIDWEST AND NORTHWEST. ON THE OTHER HAND THE SOUTHEAST MAY NOT BE AS WARM AS INDICATED BY TREND ALONE - SO AREAS OF CL WERE INTRODUCED THERE AND IN PARTS OF THE GREAT PLAINS DURING THE LAST TWO LEADS. PROBABILTY ANOMALIES ARE MODEST IN ALL CASES AT THE LONGEST LEADS.

FOR A DESCRIPTION OF THE STANDARD FORECAST TOOLS - THEIR SKILL - AND THE FORECAST FORMAT PLEASE SEE OUR WEB PAGE AT:
HTTP://WWW.CPC.NCEP.NOAA.GOV/PRODUCTS/PREDICTIONS/MULTI-SEASON/13_SEASONAL_OUTLOOKS/TOOLS

NOTE - THESE CLIMATE OUTLOOKS ARE INTENDED FOR USE PRIOR TO THE START OF THEIR VALID PERIODS. WITHIN ANY GIVEN VALID PERIOD OBSERVATIONS AND SHORT AND MEDIUM RANGE FORECASTS SHOULD BE CONSULTED. THIS SET OF OUTLOOKS WILL BE SUPERSEDED BY THE ISSUANCE OF THE NEW SET NEXT MONTH ON THURSDAY JANUARY 18 2001.

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